## AMENDMENTS TO THE DRAWINGS

Please amend Figures 3A, 3B and 5 as shown in the enclosed replacement sheet. The attached sheets of formal replacement drawings include changes to Figure 3A and 3B to add the reference numbers 31-33, and changes to Figure 5 to replace the term "Derive Neutron Flux" to "Derive Flux."

## REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

**Disposition of Claims**

Claims 1-2 and 4-13 are pending in this application. Of these claims, claims 10-13 are withdrawn from consideration. Claims 1 and 10 are independent. The remaining claims depend, directly or indirectly, from claim 1 or 10.

**Claim Amendments**

Claims 1, 5 and 9 have been amended by way of this reply to clarify that the voltage is applied to between the electrodes as suggested by the Examiner. No new subject matter has been added by way of these amendments, as support for these amendments may be found, for example, in Figures 3B of the publication of the Specification. Claim 1 has been amended by way of this reply to specifically recite the feature, "outputting the result of the magnitude of the high-energy radiation flux." No new subject matter has been added by way of this amendment, as support for these amendments may be found, for example, in paragraph [0053] of the publication of the Specification. Further, these amendments do not raise new issues or require new search, or at least simplify issues for appeal. Accordingly, entry and favorable consideration is respectfully requested.

**Objection(s)**

*Drawings*

Figure 3B is objected to as the Examiner alleges that, "Applicant has set forth nothing more than a black box," and "the Examiner has set forth a concern as to how and in what manner Applicant is capable of performing the method set forth in the claims that should be supported by the drawings" (*see* Office Action dated April 27, 2007, at page 4). Applicant respectfully disagrees because 37 C.F.R. § 1.83 (a) does not require such requirements as the Examiner alleges. Indeed, "conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box)" (*see* 37 C.F.R. § 1.83 (a)).

As explained in the previous Response dated September 1, 2006, the "Voltage Pulse Circuitry" is a conventional feature, where the detailed illustration is not essential for a proper understanding of the invention. In fact, for example, paragraph [0030] of the publication of the Specification clearly states that the voltage pulse circuitry **33** may be any voltage pulse circuitry known in the art or yet to be developed, and can provide an ion transport drive voltage to the ion chamber for a selected duration (*i.e.*, a voltage pulse). Also, one or more embodiments of the invention are directed to a method for measuring high-energy radiation accurately (*see* Publication of the Specification, paragraph [0053]). With reference to Figures 4 and 5, for example, an ion transport voltage is turned on in step 52, then, an ion current is measured in step 53, and, then, a leakage current is measured in step 55. Then, "[t]he difference between the measurements taken in step 53 and 55 is then used to derive the ion currents that result from high-energy radiation flux" (*see* Publication of the Specification, paragraph [0035]). Thus, the

detailed illustration of the "Voltage Pulse Circuitry" is not essential for a proper understanding of the invention. Additionally, the box shown in Figure 3 is clearly labeled as "Voltage Pulse Circuitry." Therefore, the box labeled as "Voltage Pulse Circuitry" in Figure 3B clearly complies with 37 C.F.R. § 1.83 (a). Therefore, this objection with respect to Figure 3B is not proper. Accordingly, the withdrawal of this objection with respect to Figure 3B is respectfully requested.

In addition, even assuming that the Examiner intended to allege that the enablement requirement under 35 U.S.C. § 112, first paragraph, is not satisfied, Applicant respectfully submits that it is improper to conclude that a disclosure is not enabling based only on the allegations, "the Examiner has set forth a concern as to how and in what manner Applicant is capable of performing the method set forth in the claims that should be supported by the drawings," "the Voltage Pulse Circuitry is essentially a black box with no description of the internals thereof" and "[t]he disclosure is thus insufficient in failing to set forth in an adequate and sufficient fashion, a description of the internals of the item listed which would enable the device to perform all of the functions, etc. that are disclosed and claimed (*see* Office Action dated April 27, 2007, at page 4 and Office Action dated June 7, 2006, at pages 3-4).

Indeed, the test of enablement is whether one reasonable skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation (*see* MPEP § 2164.01(a)). There are many factors to be considered when determining whether a disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue". As set forth in MPEP § 2164.01(a), the factors include, but are not limited to:

(A) The breadth of the claims;

(B) The nature of the invention;

(C) The state of the prior art;

(D) The level of one of ordinary skill;

(E) The level of predictability in the art;

(F) The amount of direction provided by the inventor;

(G) The existence of working examples; and

(H) The quantity of experimentation needed to make or use the invention.

Here, the Examiner does not consider any these factors. It is improper to simply conclude that a disclosure is not enabling while ignoring these factors. Further, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by the claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for doubting any assertions in the specification as to the scope of enablement (*see In re Wright*, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)). The Examiner has not met his burden of proof to provide a reasonable basis to question the enablement provided for the claimed invention. Also, the Examiner has not set forth how one of ordinary skill in the art would require "undue experimentation" to practice Applicants' claimed invention. Therefore, Applicant respectfully submits that it is also improper to conclude that a disclosure is not enabling.

Figure 7 is objected to as the Examiner alleges that step 7 in Figure 7 should be "Derive Flux," not "Derive Neuron Flux." Because the originally filed application does not include Figure 7, Applicant assumes that the Examiner intended to cite Figure 5 instead of Figure 7 because only Figure 5 includes the term "Derive Neuron Flux." By way of this reply, Figure 5

has been amended as suggested by the Examiner. Accordingly, withdrawal of this objection with respect to Figure 5 is respectfully requested.

The drawings are objected to as failing to comply with 37 C.F.R. 1.84 (p)(5) because they do not include the reference numbers 31-33. The drawings have been amended in this reply in view of this objection. Accordingly, withdrawal of this objection is respectfully requested.

*Claims 1, 5 and 9*

Claims 1, 5 and 9 are objected to because of the informalities. Claims 1, 5 and 9 have been amended by way of this reply to clarify that the voltage is applied to between the electrodes as suggested by the Examiner. Accordingly, withdrawal of this rejection with respect to claims 1, 5 and 9 are respectfully requested.

**Rejection(s) under 35 U.S.C. § 101**

Claims 1, 2 and 4-9 stand rejected under 35 U.S.C. § 101 as the Examiner alleges that the claimed invention is directed to non-statutory subject matter. In particular, the Examiner alleges that, "[a]lthough, the claims appear useful and concrete, there does not appear to be a tangible result claimed" (*see* Office Action dated April 27, 2007, at page 5). Independent claim 1 has been amended to by way of this reply to explicitly recite "outputting the result of the magnitude of the high-energy radiation flux." Thus, a magnitude of the high-energy radiation flux is determined, and the result is outputted. Therefore, independent claim 1 has been amended to produce a tangible result. Claims 2 and 4-9 depend directly or indirectly from claim 1. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection(s) under 35 U.S.C. § 102**

Claims 1, 2, 4, 6, and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Admitted Prior Art (hereinafter "APA"). Independent claim 1 has been amended by way of this reply as explained above. To the extent that this rejection may still apply to the claims, the rejection is respectfully traversed.

As explained above, one or more embodiments of the invention are directed to a method for measuring high-energy radiation accurately (*see* Publication of the Specification, paragraph [0053]). With reference to Figures 4 and 5, for example, an ion transport voltage is turned on in step 52, then, an ion current is measured in step 53, and, then, a leakage current is measured in step 55. Then, "[t]he difference between the measurements taken in step 53 and 55 is then used to derive the ion currents that result from high-energy radiation flux" (*see* Publication of the Specification, paragraph [0035]).

Accordingly, independent claim 1 requires, in part, applying a voltage pulse for a predetermined time between electrodes in an ion chamber, wherein the ion chamber is filled with a gas capable of forming charged ions by high-energy radiation, then, measuring an ion current signal related to ion currents induced by the voltage pulse while the voltage pulse is being applied to the electrodes, then, measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped, and, then, determining a magnitude of the high-energy radiation flux dependent on the ion current signal and the leakage current signal.

In contrast, APA fails to show or suggest at least, "measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped" and "determining a magnitude of the high-energy radiation flux dependent on the ion current signal and the leakage current signal." In fact, APA does not measure a leakage current signal individually and

does not determine a magnitude of a high-energy radiation flux dependent on the leakage current signal.

Specifically, APA discloses that, "when a potential is applied to the electrodes 15 and 16, the ions are swept to the electrodes of opposite charges, producing currents," and "the ion currents measured by the ion chamber may be used to derive the magnitudes of the neutron flux" (*see* Publication of the Specification, paragraph [0006]). Also, APA discloses that, a "leakage current can be a significant fraction of the total measured current" (*see* Publication of the Specification, paragraph [0008]). That is, APA clearly discloses measuring the sum of the ion current signal and the leakage current at the same time. Thus, APA does not measure a leakage current signal individually, and, thus, cannot determine a magnitude of a high-energy radiation flux dependent on the leakage current signal. Further, because APA clearly discloses measuring the sum of the ion current signal and the leakage current at the same time, APA also necessarily cannot show or suggest the specific combination of the steps required by claim 1.

The Examiner alleges that Applicant's claims set forth nothing more than a standard procedure of zeroing out a detector. The Examiner also alleges that it is old and well known to zero a detector before using it, relying on any of U.S. Patent No. 3,045,123 to Frommer (hereinafter "Frommer), Experiment 2-8, or U.S. Patent No. 5,905,262 to Spanswick (hereinafter "Spanswick"). Further, the Examiner alleges that, "[a]fter the leads are attached and before resistance measurements are taken the meter must be zeroed either by automatic means or manually dialing in the manner" (*see* Office Action dated April 27, 2007, at page 7).

As an initial matter, Applicant respectfully asserts that this rejection is unclear because it is unclear which step of claim 1 corresponds to which step of the procedure of zeroing out as

alleged by the Examiner. Despite the ambiguity in the rejection, Applicant respectfully traverses the rejection for the reasons set forth below

Even assuming *arguendo* that it is old and well known to zero a detector before using it, the procedure of zeroing out a detector, whether considered separately or in combination with APA, does not show or suggest the above limitations. In fact, in the procedure of zeroing out a detector, a skilled artisan would recognize that a magnitude of a high-energy radiation flux is determined based not on a leakage current signal but on only an ion current signal because the effect of the leakage signal is removed when zeroing out the detector.

Further, one skilled in the art would recognize that the procedure of zeroing out is conducted as follows. A leakage signal is measured by a meter before applying a voltage to a circuit to be measured, and then, the position of zero showed by the meter is adjusted. Then, an ion current signal of the circuit is measured by the meter. That is, a leakage signal is measured by a meter before applying a voltage. Therefore, the procedure of zeroing out necessarily cannot show or suggest the feature, "measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped," as required by claim 1.

The Examiner further alleges that the BASIC ELECTRICAL SAFETY teaches that "before a measurement is to be made on high voltage circuits prior to manual manipulation the multimeter should be tested on a known good power source. . . . then applied to the circuit in question and then again on the known good source" (*see* Office Action dated April 27, 2007, at page 7).

Applicant respectfully asserts that this rejection is also unclear because it is unclear which step of the claim 1 corresponds to which step of the BASIC ELECTRICAL SAFETY.

Despite the ambiguity in the rejections, Applicant respectfully traverses the rejection for the reasons set forth below.

Because of the ambiguity in the rejection, Applicant assumes that the Examiner intended to allege that a voltage is applied and an ion current signal is measured on a known good power source, and, then, a leakage current signal of the circuit in question is measured. In this assumption, a skilled artisan would readily recognize that the leakage current signal of the circuit in question is not measured after ion transport has stopped as required by claim 1. A voltage has not applied to the circuit in question when measuring the leakage current signal of the circuit in question. Therefore, an ion transport has not started, and the ion transport cannot be stopped in the circuit in question. This is also evidenced by that the Examiner alleges that "zeroing out a meter and testing deenergized circuits" (*see* Office Action dated April 27, 2007, at page 7). Therefore, the BASIC ELECTRICAL SAFETY necessarily cannot show or suggest at least the feature, "measuring a leakage current signal after the voltage pulse has been turned off and after ion transport has stopped," as required by claim 1.

Finally, the Examiner does not point to any specific aspect of APA, the procedure of zeroing out a detector and the BASIC ELECTRICAL SAFETY, as relied on the Examiner, which discloses or suggests each specific step and the specific combination of the steps as required by claim 1. However, "when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference (*see In re Rijckaert,* 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993)). In fact, the identical invention must be shown in as complete detail as contained in the claim (*see Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). "In deciding the issue of anticipation, the trier of fact must identify the elements of the claims,

determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference" (*see Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, 730 F.2d 1452, 1458, 221 USPQ 481 (Fed. Cir. 1984)). Instead, the pending Office Action has failed to establish that APA, the procedure of zeroing out a detector and the BASIC ELECTRICAL SAFETY, whether considered separately or in combination, show or suggest the limitations required by claim 1.

Thus, independent claim 1 is patentable over APA, the procedure of zeroing out a detector and the BASIC ELECTRICAL SAFETY. Dependent claims are allowable for at least same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection(s) Under 35 U.S.C § 103**

Claims 1, 2, and 4-9 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over APA as applied to claim 1, 2 and 4-9 in view of any of Frommer, Experiment 2-8, or Spanswick. Claims 5 and 9 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over APA as applied to claims 1, 2 and 4-9, and further in view of U.S. Patent No. 6,889,152 to More (hereinafter "More"). Claims 5 and 9 also stand rejected under 35 U.S.C. 103 (a) as being unpatentable over APA in view of any of Frommer, Experiment 2-8, or Spanswick, as applied to claims 1, 2, and 4-9, and further in view of More. For the following reasons, these rejections are respectfully traversed.

As discussed above, independent claim 1 is patentable over APA. Frommer, Experiment 2-8, Spanswick and More, like APA, fail to show or suggest the claimed invention as recited in amended independent claim 1, and fail to supply that which APA lacks. Specifically, Frommer, Experiment 2-8, Spanswick and More also fail to show or suggest at least above limitations and

the specific combination of steps as required by claim 1. This is evidenced by the fact that Frommer, Experiment 2-8, and Spanswick are relied on merely to provide the procedure of zeroing out a detector (*see, e.g.*, Office Action dated April 27, 2007, at pages 7 and 10). This is also evidenced by the fact that More is relied on merely in an attempt to provide the details such as adjusting gain of amplifier and applying a ramping voltage (*see, e.g.*, Office Action dated April 27, 2007, at pages 10-12).

In view of the above, APA, Frommer, Experiment 2-8, Spanswick and More, whether considered separately or in combination, fail to show or suggest the present invention as claimed in independent claim 1 of the present application. Thus, independent claim 1 is patentable over APA, Frommer, Experiment 2-8, Spanswick and More, for at least the reasons set forth above. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

**Conclusion**

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 07754/046001).

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Respectfully submitted,

By: _____

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